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ABSTRACT

A total of 112 female teachers and student teachers acted as participants or observers in an experimental situation in which the participant taught a simulated elementary school child a mathematics lesson for three 5-minute trials while the observer watched. The child's performance supposedly either improved over trials (Low-High), deteriorated over trials (High-Low), or ramained stable, but low (Low-Low). Contrary to prediction, participants appeared to attribute change in the child's performance (improvement or deterioration) to themselves. Participants were somewhat more likely to attribute poor performance to situational factors than observers were. However, both groups attributed low or descending performance to situational factors more often than they did high performance. The Low-High child was evaluated higher on measures of sentiment and skill than the High-Low child, who in turn was evaluated higher on sentiment, skill and effort than the Low-Low child. (Author/SET)

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Abstract

Fifty-six pairs of female teachers and student teachers acted as participants or observers in an experimental situation in which the participant taught a supposed elementary-school child a mathematics lesson for three five-minute trials while the observer watched. The child's performance supposedly either improved over trials (Low-High), deteriorated over trials (High-Low), or remained stable, but low (Low-Low). Participants were somewhat more likely to attribute poor performance to situational factors than were observers. However, both groups attributed low or descending performance to situational factors more than they did high performance. Contrary to prediction, participants appeared to attribute change in the child's performance (improvement or deterioration) to themselves. The Low-High child was evaluated higher on measures of sentiment and skill than the High-Low child, who in turn was evaluated higher on sentiment, skill and effort than the Low-Low child.

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TEACHERS' AND OBSERVERS' PERCEPTION OF CAUSALITY FOR A CHILD'S PERFORMANCE[1]

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This study investigated how one important variable, the child's performance, affected the teacher's perception of a child and the causal source of his performance. It was hypothesized that when teacher and child interact in the classroom, the pattern of the child's performance affects not only the teacher's belief concerning her competence, but also her attribution of causality for the child's performance and her sentiments toward him. This influence of the child's performance on the teacher's belief is important, because these beliefs, in turn, may influence the child's permanent learning and achievement (Rosenthal & Jacobson, 1966).

The social-psychological position upon which this study is based (Heider, 1958) assumes that when man perceives the occurrence of an event within his life space he searches for the causal locus of that event. He may attribute the event internally to self or externally to the environment (e.g., the teacher may attribute the child's performance internally to her own teaching or externally to the child or to situational demands). In either case, causal attribution is greatly influenced by a force toward consistency among a person's many cognitions and beliefs. New attributions must concur with an already existing constellation of cognitions about one's world. Although veridical interpretation of causal relationships usually helps adaptation and survival in the environment, the force toward consistency among a person's many cognitions and beliefs can create situations in which misattribution of the cause of a new event is adaptive for the individual. Biased attribution is sometimes consonant with a person's perception of himself and his world.

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Some types of attributional errors may occur in the classroom. Teachers may misattribute the intentions and characteristics of their students. This study examines one situation in which biased attribution can occur (Kelley, 1967) -- one in which the relevant effects of an event have positive or negative affective significance for a person. Here the event of significance is the child's performance, and the person for whom the event is significant is the teacher.

Previous studies (Johnson, Feigenbaum, & Weiby, 1964; Beckman, 1970) have shown that when a student improved with instruction, the instructor thought herself responsible for the student's success, i.e., she accepted credit which is ego-enhancing. When the student's performance remained low, the teacher thought the child responsible, i.e., she displaced blame which is ego-protective. Beckman's results also showed that teacher observers (who were told about a hypothetical situation similar to the experimental situation) generally did not differentially attribute causation for the children's differing performance, as did teacher participants.

Both the Johnson et al. and the Beckman studies suggest that teachers may have attributional biases which are determined by the child's current pattern of progress and which, in turn, can affect the child's future progress. However, both of these studies contain certain methodological limitations. The Johnson et al. study's coding of causation was not specific, (i.e., causation was coded only as internal or external), and it had no comparison group of uninvolved teachers which would have allowed estimation of the degree of ego-protective or ego-enhancing attribution. While the Beckman study varied degree of involvement, the differences found between participants and observers may have been due to population and procedural differences between the two groups. For instance, the observer condition placed the teacher in

direct contact with the children, while in the participant condition, the children were supposedly on the other side of a one-way mirror.

In contrast to the previous Beckman study, the current study did not confound the effects of involvement in the situation (participant vs. observer) with the effects of type of situation (real vs. hypothetical). The previous Beckman experiment considered only participants in a real situation and observers in a hypothetical situation. Real observers, watching real participants, may react differently than hypothetical observers do. Real observers have additional information about the participant's teaching performance and a higher level of personal involvement in the situation, which can affect the attribution made.

It was hypothesized that participants and observers would differentially attribute causality in each outcome condition. The participant is expected to attribute the child's success (in the Low-High condition) to herself because such attribution is ego-enhancing. On the other hand, she should attribute the child's failure (in the Low-Low and High-Low conditions) to external factors, because this is ego-protective. Observers, however, would not be expected to exhibit such ego-relevant attributional biases. It was also hypothesized that while observers would evaluate the child primarily on the basis of his performance, participants would show ego-relevant bias in their ratings of the child.

Method

Subjects

One hundred and twelve Ss who were full or part-time education students at the University of California, Los Angeles, participated in this study. Ss were teachers (N=34) or education students in the teacher-training program (N=78). All but seven education students had participated in student-teaching.

All Ss were assigned randomly to role (participant or observer) and condition. Female Ss were recruited through an advertisement in the student newspaper and each was paid $4.00 for her time.

Apparatus

The participant (P) was seated at a table facing a one-way glass partition to a second room. The observer (O) was seated at a desk to the side and behind the participant. Directly behind P was a large blackboard with chalk and erasers. On the table in front of P was a microphone and a remote control switch. When the switch was "on", auditory input from the microphone on the table could be heard in the next room. On the shelf below the glass window, facing P but beyond her reach, was a second remote control switch. When this switch was "on", the Ss were able to hear a tape recording of a child, supposedly present in the next room, through a speaker placed above the window partition.

Procedure

Each pair of the Ss were told that they were taking part in a study of the effectiveness of various teaching methods and means of communication. The participant was to teach certain mathematical concepts and symbols concerning subsets to a fifth grade child, and the observer was to observe carefully, since she too would answer questions at the end of the lesson regarding what had occurred. Both Ss were given a statement of the purpose of the presentation, some background material about sets and subsets, and the three sets of problems (that the simulated child was to do later on) with correct answers listed.

After the one-way communications system was explained, the experimenter allowed the Ss to introduce themselves to the child. The tape-recorded child confederate responded appropriately saying hello and introducing himself. Then the experimenter told the Ss that "during the presentation you (indicating participant) will control the switch which allows the child to listen to you,

but, this other switch will remain closed. This means that although the child can see and hear you, you will be unable to see or hear him."

The participant was given 15 minutes (three five-minute trials) in which to present the material to the child. She received an additional eight minutes, before the first five-minute trial, to prepare for her presentations. During this time, the observer was occupied with the irrelevant task of reading reprints on teaching with educational television.

Each trial was identical in procedure. First the participant lectured for five minutes. After the teacher's presentation was completed, the child supposedly filled out a problem set. While the child was supposedly doing this task, the participant was told on trials 1 and 2 to "plan what you want to present next time." The observer was given more reading material. When the experimenter returned with the child's paper, participant and observer examined the problems, noted the number correct, and were allowed to ask questions concerning the problems or their grading. The experimenter then left "to return the paper to the child" and indicated to both Ss that a new presentation period was beginning.

Manipulation of Child's Performance

The problem sets which the Ss examined after each presentation informed them of the child's performance. Each of the three problem sets consisted of six problems. Thus, the highest possible score on each set of problems was six. The performance of the child was varied in each of the three outcome conditions. In the Low-High condition, the child's performance increased over trials (one correct on trial 1, three correct on trial 2, six correct on trial 3) while in the High-Low condition, performance decreased (six correct on trial 1, three correct on trial 2, one correct on trial 3). In the Low-Low condition, the child's performance remained low, but stable (one correct on

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trial 1, two correct on trial 2, one correct on trial 3).

Post-trial and Postexperimental Dependent Measures

After they examined the child's paper, both Ss estimated the child's performance on the next problem set and rated the participant's presentation on a seven-point scale. The similar postexperimental question sets for participants and observers included both open-ended and structured questions. The open-ended question asked "Why do you think the child performed as he did?" The rank-order structured questions asked the subjects to rank the importance of several causal explanations for the child's performance. Measures of sentiment (pride in performance, praise for the child, and reward that the child deserves) were each rated on 11-point graphic rating scales. All Ss rated each child's skill, effort, and performance and the problem difficulty on seven-point scales.

After the questionnaires had been completed, all Ss were told the purpose of the experiment. They were asked to not reveal the details of the experiment to other teachers who could later be subjects.

Results

Two pairs of Ss (one pair in the Low-Low condition, the other in the High-Low condition) were discarded from the final analysis because one or both were suspicious of the procedure, thought that a child was not really present in the next room or believed the experimenter was controlling feedback. Data, except for the open-ended causality question, were analyzed through use of 3 (Condition) x 2 (Role) x 54 (Pairs) analysis of variance for equal n's, with pairs nested within Condition but crossing the Role (Participant or Observer) factor. Since no significant differences occurred between regular teachers and

student teachers on any of the dependent measures, these groups are combined in all data analyses.

Success of the Experimental Manipulations

Participants' and observers' ratings of the child's over-all level of performance agreed closely with the child's actual over-all performance, and their estimates of the child's future performance agreed closely with the child's actual level of performance. Thus, Ss in the three experimental conditions differentially perceived the child's performance. It was, therefore, concluded that the manipulation of the child's performance was successful.

Perception of Causality

The answers to the open-ended causality question were coded into the following non-overlapping categories: (a) Teacher's presentation; (b) Situation; (c) Child's ability; (d) Child's motivation; and (e) Child's background. In many of the Chi Square analyses, the three child categories were combined because of the small n's involved. No S listed responses that could be classified in more than two of the categories and only 35% of the Ss listed two categories. Check coding of the categories over a randomly chosen 20% of the data showed 92.5% agreement between two independent coders.

Data from the open-ended causality question were analyzed in three ways: First choice only (arbitrarily defined as the first choice written down), second choice (first choice was replaced by second choice for those who gave a second choice), and combined choice (first and second choice). Since the pattern of results was similar for all three measures, χ^2's given are for the combined choice measure except where noted when more than one category is involved. Then only the first choice Chi Square is given so that each person's response will receive equal weight. The proportion and number of participants and observers in each outcome condition who mention a certain category

for the combined choice analysis are stated in Table 1.

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Insert Table 1 about here

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The only consistent over-all difference between teachers and observers was the tendency for participants to attribute low performance to situational factors more often than did observers ($\underline{X}^2 = 4.67$, $\underline{p} < .05$). This attributional bias of participants to displace causality for poor performance onto the environment was especially pronounced in the Low-Low condition ($\underline{X}^2 = 5.44$, $\underline{p} < .05$). Participants also were more likely to accept responsibility (i.e., give a "teacher" response) for the child's performance when this performance decreased than when it was stable and low ($\underline{X}^2 = 5.73$, $\underline{p} < .05$) while observers showed no such differentiation.

Situation was mentioned as a causal factor for performance by both participants and observers more often in the High-Low ($\underline{X}^2 = 16.13$, $\underline{p} < .001$) and Low-Low ($\underline{X}^2 = 6.13$, $\underline{p} < .05$) conditions than in the Low-High condition. Subjects also were somewhat more likely to mention situational factors in the Low-Low condition than in the High-Low condition ($\underline{X}^2 = 3.70$, $\underline{p} < .07$) Characteristics of the child were mentioned as responsible for the outcome in the Low-High condition more than in the Low-Low condition ($\underline{X}^2 = 16.39$, $\underline{p} < .001$).

When the frequency of different categories was compared within conditions, results (First Choice only) showed that for participants "situation" was mentioned more often than "teacher" or "child" in the Low-Low condition (Fisher exact test, $\underline{p} < .05$) while the reverse occurred in the Low-High condition (Fisher exact test, $\underline{p} < .05$). Also, situation was mentioned more often in the High-Low condition while child's background and other characteristics of the

child were mentioned more often in the Low-High condition (Fisher exact tests, $p < .05$). The same pattern of results generally followed for observers, but differences were not significant.

Data from the rank-order causality question were first transformed by an expected value of the order statistic for a normal distribution and then an analysis of variance was computed. Mean data from Table 2 reveal that the order of importance was fairly consistent. Teaching was usually ranked as most important; then came ability. Difficulty was ranked lowest, while background, motivation, and attention were in the middle range.

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Insert Table 2 about here

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Surprisingly, attention was ranked as less important in the Low-Low than in the other conditions ($F = 4.25$, $p < .05$). Background was ranked as more important in the Low-High than in the Low-Low or High-Low condition ($F = 5.27$, $p < .05$). In contrast to the open-ended question, both participants and observers ranked teaching as less important in the Low-High condition than in the other conditions ($F = 5.24$, $p < .05$). Participants showed an even more extreme downgrading of the role of teaching than did observers (although not a significant difference). No other consistent differences were found between teachers and observers.

Measures of Sentiment

Means of individual measures of pride, praise, and reward are presented in Table 3. Each of the three individual measures showed a significant main

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Insert Table 3 about here

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effect for Condition (Reward, $F = 5.97$, $p < .05$; Pride, $F = 43.36$, $p < .001$; Praise, $F = 18.78$, $p < .001$). The pattern of results on these measures of sentiment was consistently the same although the reward measure did not reach significance on individual comparisons. The child in Low-High condition was rated significantly higher than the child in the High-Low condition (Pride, $F = 45.33$, $p < .001$; Praise, $F = 11.62$, $p < .01$; Reward, $F = 2.58$, $p < .20$), who in turn was rated significantly higher than the child in the Low-Low condition (Pride, $F = 15.05$, $p < .001$; Praise, $F = 7.39$, $p < .01$; Reward, $F = 3.38$, $p < .20$). Participants rated the child lower on Pride ($F = 4.38$, $p < .05$) and lower, but not significantly lower, on Praise and Reward in the Low-Low condition than did observers.

Skill, Effort and Difficulty

As shown in Table 3, participants' ratings of the child's skill and effort and the problems' difficulty generally followed the same pattern as observers' ratings. The Low-High child was rated higher in skill than the High-Low child ($F = 10.43$, $p < .01$). In turn, the High-Low child was rated higher than the Low-Low child in skill ($F = 54.67$, $p < .001$) and effort ($F = 31.35$, $p < .001$). No significant over-all differences occurred between participants and observers. However, observers rated the Low-Low child higher in effort than did participants ($F = 14.00$, $p < .001$), just as they evaluated the Low-Low child higher than did participants on ratings of sentiment. Difficulty scores showed a consistent pattern for both participants and observers. Difficulty was rated as higher in the Low-Low condition than in the High-Low condition ($F = 5.92$, $p < .05$) which, in turn, was higher in difficulty than the Low-High condition ($F = 4.13$, $p < .05$).

Post-trial Ratings of Teacher Performance

After each trial, both participants and observers rated the participant's presentation on that trial on a seven-point scale. Observers consistently

rated the teachers' performance higher than did participants themselves (Trial 1, $F = 6.75$, $p < .05$; Trial 2, $F = 12.80$, $p < .01$; Trial 3, $F = 6.96$, $p < .05$). These post-trial ratings were made after subjects knew the child's performance on that trial.

The ratings closely followed the child's actual performance and subjects' expectancies regarding the child's future performance. On Trial 1, in the High-Low condition, teaching was rated as better than in the other two conditions ($F = 6.75$, $p < .05$). On Trial 2, the teacher's presentation was rated lower in the Low-Low condition than in the other conditions ($F = 8.40$, $p < .01$). On Trial 3, teacher's presentation was rated highest in the Low-High condition, next came the High-Low and then Low-Low (this difference is not significant).

Discussion

The pattern of results only partially agrees with earlier results (Johnson et al., 1964; Beckman, 1970) and with the hypotheses of the present study. As was predicted, on the open-ended questions participants appeared to place blame on situational factors more than did observers in the low performance conditions. However, situational factors were mentioned more often in the ego-protective conditions than in the ego-enhancing condition by both participants and observers. Instead of only taking credit for the child's successful performance as in earlier studies participants appeared to be taking credit for both increasing and decreasing performance, but particularly for decreasing performance.

An examination of the three possible over-all response categories (child, teacher, situation) showed that in the Low-Low condition, participants overwhelmingly displaced blame onto the environment, while observers placed blame on both situation and teacher. In the High-Low condition, participants,

in approximately equal numbers, accepted responsibility for failure, displaced responsibility onto the environment or mentioned both categories; observers equally mentioned all three categories. In the Low-High condition both groups placed causality upon the teacher herself or the child, not on situational factors.

Apparently, when the child's performance is originally high, participants find it difficult to entirely absolve themselves from blame for its deterioration. Change in outcome (the child's performance) may indicate personal responsibility to the participants (as agents of this change), while constant outcome is attributed to external factors. Participants' willingness to credit the child for increasing performance but not decreasing performance (while observers equally attributed responsibility to the child in both conditions) may be an indication (along with attribution to the "teacher" category) of an anti-defensive attribution, an over-willingness to accept some responsibility for unsuccessful performance, among participants.

In contrast to the open-ended question, participants took only slightly less personal responsibility in the Low-High condition on the rank order question than in the High-Low condition and indeed, took least personal responsibility in the Low-Low condition. Here, participants ranked the child (especially his ability) as the most important factor in determining increasing performance in the Low-High condition; then came their teaching. This ranking of teaching as less important in the Low-High condition, while not agreeing with specific open-ended data, does fit into the pattern of anti-defensive attributions. Participants' lower ratings of their own performance may be another indication of anti-defensive attribution. They may indicate that the presence of a peer causes the participant to devaluate her own performance and appear modest.

Sentiments, Skill and Effort

In contrast to the earlier Beckman study where participants' evaluations seemed colored by ego-relevant attribution (as indicated by a downgrading of the High-Low as compared to the Low-Low child), the present pattern of results on measures of sentiment was the same for both participants and observers. Evaluation was based on the child's level of performance, and both participants and observers responded as only observers responded in the earlier experiment.

The data on skill and effort, along with sentiment results, indicate that a recency effect was occurring; the child with the ascending pattern of success was judged as more skillful, motivated and deserving of reward, pride and praise than the child with the decreasing pattern. Although Jone & Welsh (1971) did obtain a recency effect similar to the present one, Jones, Rock, Shaver, Goethals & Ward (1968) consistently have found a strong primacy effect in which the person with a decreasing pattern of success on various puzzles was seen as more able and intelligent. The critical variable in determining what effect occurs, as suggested by Jones and Welsh, may be the conditions and nature of the task.

Relationship to Previous Results

The differences between the results of the present study and results of the previous Beckman (1970) study may be due to differences in either (1) the populations or (2) the experimental situation. Perhaps teachers are becoming more sophisticated about research dealing with teacher bias (e.g., Rosenthal & Jacobson, 1966), which has received wide distribution within the educational field. Also, through recent teacher training which emphasizes specific instructional objectives, new teachers may be learning to accept responsibility for any change in their students' performance.

The situational determinants of the present study allowed a degree of involvement on the part of observers not present in previous studies. In all probability the presence of observers of the same situation affected participants as much as the presence of participants affected observers. In fact, some evidence suggests that the observer affects the participant's response even more than the participant affects the observer's responses. While present patterns of observers' responses on measures of sentiment, skill and effort remain the same as in the previous Beckman experiment, the participants' ratings show inversion of response patterns. The present study has just begun to explore the area of the interaction of participants and observers-- to ask who influences who. Further research is needed to assess the influence of other persons, such as peers and higher status persons, upon teachers.

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Footnotes

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Table 1

First and Second Choices Combined - Proportion of Participants and Observers in each outcome who name each category as a causal factor.

Condition	Category				
	Teacher	Child's Ability	Child's Motivation	Child's Background	Situation
Participants					
Low-High	.389	.222	.056	.278	.167
High-Low	.611	.056	.056	.056	.611
Low-Low	.167	.111	.000	.000	.889
Observers					
Low-High	.444	.167	.111	.111	.222
High-Low	.333	.278	.167	.000	.389
Low-Low	.500	.056	.000	.111	.556

Table 2

Mean Ranks for Participants and Observers in Each Condition

	Condition					
	Low-High		High-Low		Low-Low	
Category	Participant	Observer	Participant	Observer	Participant	Observer
Teaching	.22	.47	.78	.62	.61	.69
Ability	.48	.19	.02	.33	.11	-.06
Background	.26	.19	-.45	-.17	.05	-.10
Motivation	.29	-.04	.18	-.23	.03	.14
Attention	-.01	.04	-.05	-.16	-.44	-.33
Difficulty	-.40	-.77	-.49	-.37	-.36	-.34

Table 3

Mean Reward, Pride, Praise, Skill, Effort and Difficulty scores for Participants and Observers in Each Outcome Condition.

Condition	Reward	Pride	Praise	Skill	Effort	Difficulty
Participants						
Low-High	6.28	7.11	7.61	5.66	5.83	6.22
High-Low	5.28	4.67	5.78	4.83	5.39	6.78
Low-Low	3.89	1.39	3.83	3.05	3.61	7.94
Observers						
Low-High	6.61	7.05	7.39	5.44	5.56	5.72
High-Low	5.67	3.72	5.67	4.89	5.61	6.78
Low-Low	4.83	2.83	4.78	3.50	4.67	7.56